

ABSTRACT

An apparatus and method for storing, manipulating, processing, and transferring data in a memory matrix (105). The matrix (105) includes a number of multi-ported memory devices (250) arranged in banks (260), each of the devices capable of storing 5 data, a memory controller (265) for accessing the devices, and a cache (270) with an allocation table stored therein to describe data stored in the matrix. Preferably, the matrix (105) is used in a modular, network-centric memory system (100), which has a management module (125) to interface between the matrix and a network (120) of data processing systems (115), the network based on either physical or wireless connections. 10 Optionally, the system (100) further includes a non-volatile storage module (130), an off-line storage module (135), and an uninterruptible power supply (140). In one embodiment, the management module (125) is linked to the network (120), the matrix (105), the non-volatile storage module (130), and the off-line storage module (135) through multiple switched network interfaces with link failover and fallback capability 15 to provide high availability.